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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/665,687

Filing Date: September 17, 2003

Appellant(s): SKINLO, DAVID M.

Travis Dodd
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 5/2/11 appealing from the Office action
mailed 7/13/10.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 43-45 and 67-90 are pending

Claims 43-45, 67-71, 73-75 and 77-90 are rejected

Claims 72 and 76 are objected to

The claim set that the Examiner has used in the grounds of rejection is the set of claims that were filed on 4/27/10, which is different than the claims that are in the Claims Appendix filed in the appeal brief dated 5/2/11.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

3,159,508	Chreitzberg	12-1964
4,053,687	Coibion et al.	10-1977
5,755,759	Cogan	5-1998
5,912,089	Kitano et al.	6-1999
6,399,242	Kitoh et al.	6-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim 89 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. No support can be found for the negative limitation

of “wherein the tab is the **only** tab providing electrical communication between the second end cap and the electrode that is electrically insulated from the pin” as recited in claim 89. Applicants also do not provide any guidance as to where support can be found for the limitation of this newly added claim or any other newly added claim.

Looking at figures 21-24 it appears that the case which is adjacent the electrode assembly and is also conductive (as per the claims and instant specification) will also provide electrical communication to the end cap in question and therefore it is not only the tab providing the electrical communication.

Claim 90 is rejected under 35 U.S.C. 112, fourth paragraph, as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form. Claim 90 recites process steps of how the end cap can be removed from the case and how it can be positioned with respect to the case upon removal but does not provide any additional structure to further limit the structure of claim 68.

Claims 43-45, 67, 83 and 85-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,399,242 hereinafter Kitoh in view of U.S. Patent No. 3,159,508 hereinafter Chreitzberg.

Kitoh teaches a lithium battery comprising a battery case 11, a first battery lid (16), a second battery lid (17), an electrically conductive terminal pin 15 extending through the first end cap and electrically insulated from the case by sealing member 18, an electrode assembly disposed within the case with at least one electrode in electrical

communication with the pin and the opposite electrode insulated from the same pin via a separator, wherein flexible conductive tabs 5 are disposed past a center point of the second battery lid and are electrically connected to the second battery lid. Kitoh further teaches that the tab is not attached to the second battery lid continuously over a distance extending from the first location to the second location. Kitoh also teaches that the case excludes a fill hole, the tabs are welded to the terminal pin and/or cap, the end cap can be made of an electrical insulative material that the pin extends through and the case is electrically conducting (figures and column 2, line 52 – column 5, line 43).

Kitoh does not teach that the conductive tab is electrically connected to the second battery lid such that the tab is immobilized only at the second location.

As seen in figure 1, Chreitzberg teaches a battery wherein the tab 8 (on the right hand side of the figure) connects to the negative electrode 3 (also on the right hand side of the figure) and extends to the negative terminal 7 (i.e. extends across the whole interior not immobilized) and is attached to the terminal in the cap only at the terminal (i.e. is only immobilized at the terminal in the cap), see also column 2, line 44 et seq.

At the time of the invention it would have been obvious to one having ordinary skill in the art to attach the flexible conductive tabs of Kitoh only at a second location past the center point from the first location of the cap as taught by Chreitzberg in order to reduce internal resistance and facilitate current extraction from the electrode and also since it has been held that the rearrangement of parts is within a skilled artisans level of skill in the art. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

With respect to claims 67 and 87 Chreitzberg teaches that the distance from the first location to the second location is greater than the radius of the cap and the tab extends past the center point of the cap. See Figure 1.

Claim 84 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitoh in view of Chreitzberg as applied to claim 43 above, and further in view of U.S. Patent No. 5,755,759 hereinafter Cogan.

Kitoh as modified by Chreitzberg does not teach the use of PtIr alloy as the pin.

Cogan teaches a biomedical device wherein the wire electrode is made of PtIr alloy because it can record or stimulate physiological function. See Column 3, Lines 43-56.

At the time of the invention it would have been obvious to having ordinary skill in the art to use PtIr alloy as the pin for the battery of Kitoh as modified by Chreitzberg, in order to provide an electrode pin that has reduced electrical resistance thereby improving the overall performance of the battery. If a technique has been used to improve one device (an electrode made of PtIr), and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. See MPEP 2141 (III) Rationale C, KSR v. Teleflex (Supreme Court 2007).

Claims 43-45, 67, 83 and 85-89 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,399,242 hereinafter Kitoh in view of U.S. Patent No. 5,912,089 hereinafter Kitano.

Kitoh does not teach that the conductive tab is electrically connected to the second battery lid such that the tab is immobilized only at the second location. With regards to claim 89 Kitoh does not teach the use of a single tab.

As seen if figures 2 and 3, Kitano teaches a battery wherein a perforated current collector 4 is attached to the electrode assembly with a single tab 6 extending from said current collector at an area adjacent to the case to a second location A and is attached to the cap only at location A (i.e. immobilized at location A) and is not immobilized over the entire distance from the first location to the second location (column 3, lines 30-40).

At the time of the invention it would have been obvious to one having ordinary skill in the art to attach the flexible conductive tabs of Kitoh only at a second location past the center point from the first location of the cap as taught by Kitano in order to reduce internal resistance and facilitate current extraction from the electrode and also since it has been held that the rearrangement of parts is within a skilled artisans level of skill in the art. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). With regards to claim 89 it further would have been obvious to use only one combined current collector and tab in Kitoh as taught by Kitano to further reduce internal resistance and facilitate current extraction from the electrode and also since it has been held that forming in one piece an article which has formerly been formed in multiple pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893). The claimed subject matter merely combines familiar elements (a single tab connected to an end cap) according to known methods and does no more

than yield predictable results. See MPEP 2141 (III) Rationale A, KSR v. Teleflex (Supreme Court 2007).

With respect to claims 67 and 87 Kitano teaches that the distance from the first location to the second location is greater than the radius of the cap and the tab extends past the center point of the cap. See Figure 1.

Claim 84 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitoh in view of Kitano as applied to claim 43 above, and further in view of U.S. Patent No. 5,755,759 hereinafter Cogan.

Kitoh as modified by Kitano does not teach the use of PtIr alloy as the pin.

Cogan as discussed above is incorporated herein.

At the time of the invention it would have been obvious to having ordinary skill in the art to use PtIr alloy as the pin for the battery of Kitoh as modified by Kitano, in order to provide an electrode pin that has reduced electrical resistance thereby improving the overall performance of the battery. If a technique has been used to improve one device (an electrode made of PtIr), and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. See MPEP 2141 (III) Rationale C, KSR v. Teleflex (Supreme Court 2007).

Claims 68-71, 73-75, 77-82 and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitoh in view of Chreitzberg as applied to claim 43 above, and further in view of U.S. Patent No. 4,053,687 hereinafter Coibion.

Kitoh as modified by Chreitzberg does not teach that the electrodes and separators are wound around the pin to form a spiral role on the pin.

Coibion teaches an electrochemical cell wherein a combined cylindrical (i.e. tube shaped) mandrel/pin (that reinforces the electrode assembly) is used to hold an uncoated region of the electrode in a longitudinal slot during winding such that only one electrode is present in the slot and the electrode can be welded in the slot of the mandrel/pin (figures 5-9 and Column 4, line 62—Column 6, line 3).

At the time of the invention it would have been obvious to one having ordinary skill in the art to include a combined mandrel/pin in Kitoh as modified by Chreitzberg as taught by Coibion in order to properly immobilize the electrode assembly thereby preventing damage to the electrodes which could cause short circuiting when the battery is exposed to large mechanical forces or prolonged vibration.

With regards to claim 70, Kitoh as modified by Chreitzberg and Coibion teaches the claimed invention except for having a separate mandrel and pin. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a separate mandrel and pin, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. MPEP 2144.04 V (C).

With regards to claim 80, Kitoh as modified by Chreitzberg and Coibion teaches the claimed invention except for the cross-sectional shape of the mandrel. It would have been obvious to one having ordinary skill in the art at the time the invention was made to change the shape of the mandrel, since it has been held that a change in

shape is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04 IV (B).

With regards to claim 90, the recitations in claim 90 are directed to the process of removing the end cap from an already sealed battery as recited in the claims from which claim 90 depends and therefore claim 90 does not further limit the structure of the claims from which it depends. Therefore Kitoh as modified by Chreitzberg and Coibion reads on claim 90 as recited.

Claims 68-71, 73-75, 77-82 and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitoh in view of Kitano as applied to claim 43 above, and further in view of U.S. Patent No. 4,053,687 hereinafter Coibion.

Kitoh as modified by Kitano does not teach that the electrodes and separators are wound around the pin to form a spiral role on the pin.

Coibion teaches an electrochemical cell wherein a combined cylindrical (i.e. tube shaped) mandrel/pin (that reinforces the electrode assembly) is used to hold an uncoated region of the electrode in a longitudinal slot during winding such that only one electrode is present in the slot, the electrode can be welded in the slot of the mandrel/pin (figures 5-9 and Column 4, line 62—Column 6, line 3).

At the time of the invention it would have been obvious to one having ordinary skill in the art to include a combined mandrel/pin in Kitoh as modified by Kitano as taught by Coibion in order to properly immobilize the electrode assembly thereby preventing damage to the electrodes which could cause short circuiting when the battery is exposed to large mechanical forces or prolonged vibration.

With regards to claim 70, Kitoh as modified by Kitano and Coibion teaches the claimed invention except for having a separate mandrel and pin. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a separate mandrel and pin, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. MPEP 2144.04 V (C).

With regards to claim 80, Kitoh as modified by Kitano and Coibion teaches the claimed invention except for the cross-sectional shape of the mandrel. It would have been obvious to one having ordinary skill in the art at the time the invention was made to change the shape of the mandrel, since it has been held that a change in shape is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04 IV (B).

With regards to claim 90, the recitations in claim 90 are directed to the process of removing the end cap from an already sealed battery as recited in the claims from which claim 90 depends and therefore claim 90 does not further limit the structure of the claims from which it depends. Therefore Kitoh as modified by Kitano and Coibion reads on claim 90 as recited.

Claims 72 and 76 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not teach or fairly suggest that the mandrel comprises titanium and a channel to inject electrolyte

and there is no motivation for a skilled artisan to modify the prior art of record to make the instantly claimed invention of claims 72 or 76.

(10) Response to Argument

Before addressing appellants arguments regarding the rejection of claim 43 under 35 U.S.C. 103(a) as being unpatentable over Kitoh and Chreitzberg, the Examiner will address the rejection of claim 43 under 35 U.S.C. 103(a) as being unpatentable over Kitoh in view of Kitano.

With regards to the rejection of claim 43 under 35 U.S.C. 103(a) as being unpatentable over Kitoh in view of Kitano, appellants only argue features of the Kitano reference which is the secondary reference which is used as a teaching reference to show the feature of a tab being welded to an end cap at one location. Appellants acknowledge that the Examiner has properly cited figures 2 and 3 of the Kitano reference to them in the Final Rejection dated 4/20/11. For ease of discussion the Examiner is providing the figures from Kitano in a side-by-side comparison to the corresponding figures of the instant application. Below is figure 2 from Kitano and figure 22 of the instant application:

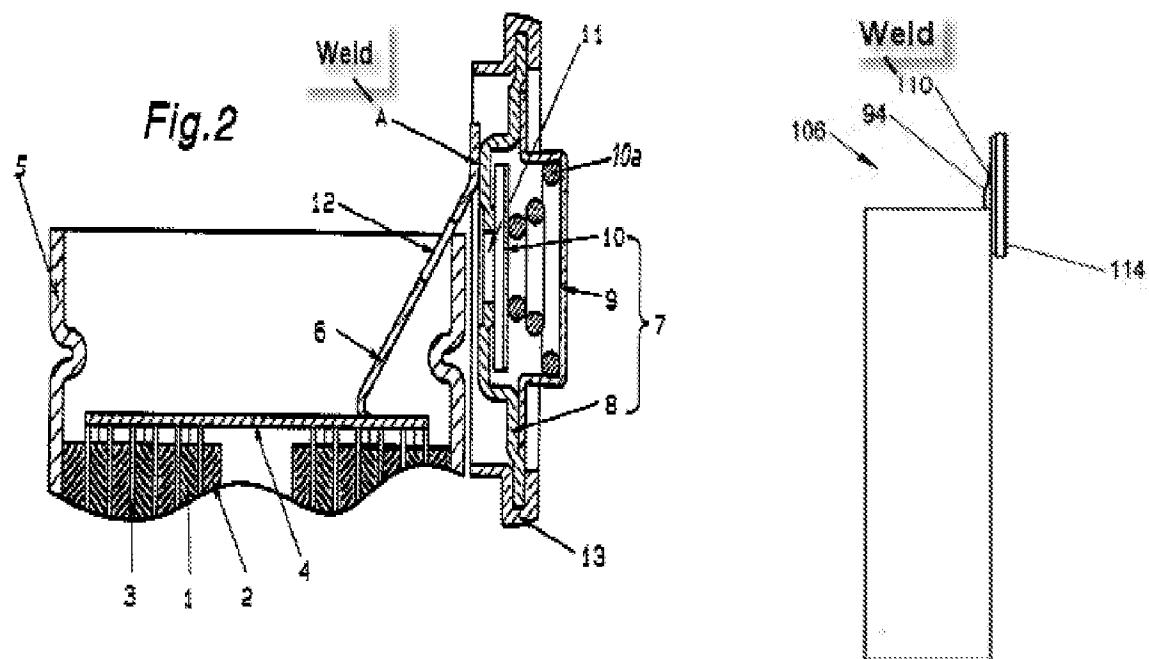
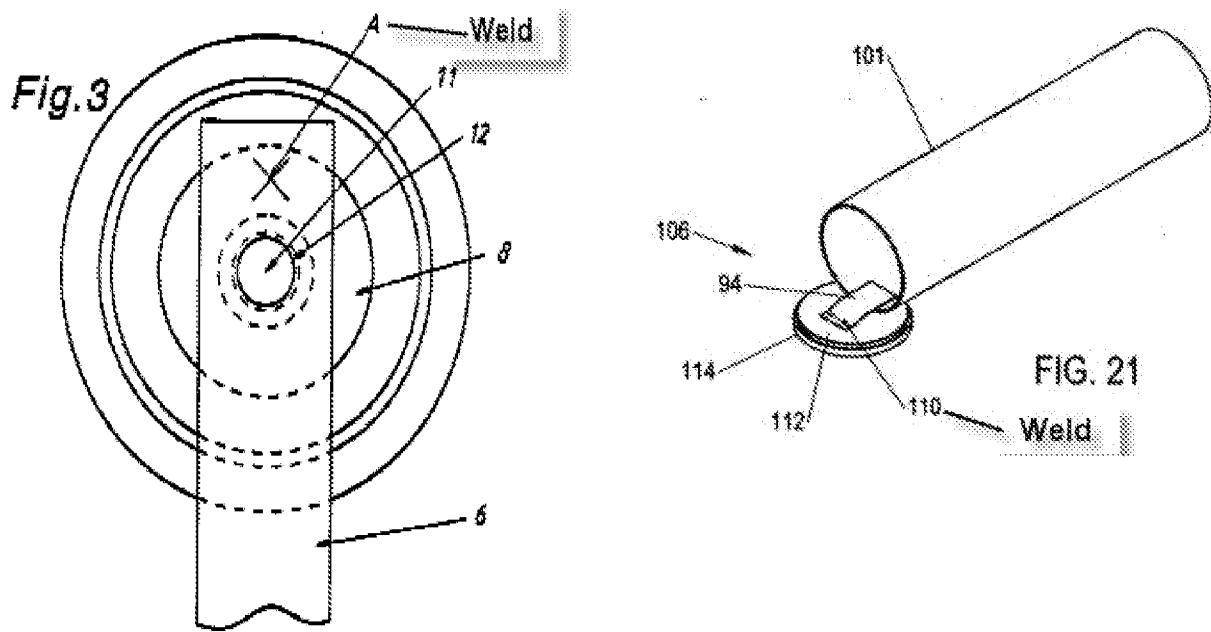


FIG. 22

As can be seen above figure 2 of Kitano is substantially identical to figure 22 of the instant invention. Below is figure 3 from Kitano and figure 21 of the instant application:



As can be seen above Kitano is showing the tab extending past the center point and being welded at weld portion A which is similar to figure 21 of the instant application and also what is being recited in instant claim 43.

Appellants only argument against figures 2 and 3 of Kitano is “that they are images that are before the assembly of Kitano’s battery” and only cite column 3, lines 30-31. However reading further in column 3 it is quite clear that the cap is sealed to the battery housing with the tab being welded only to the first weld portion A on the cap.

See column 3, lines 55-62 which is copied below:

After the positive current collecting plate 6 was welded to 55
the bottom surface of cover plate 8 at the first weld portion
A during the assembly process of the storage battery, the
closure cap assembly 7 is coupled with the opening of cell
casing 5 through an annular insulation gasket 13, and the cell
casing 5 is radially inwardly caulked at its opening end 60
portion to hermetically seal the generator element. Thus, a
nickel-cadmium battery of 1.7 Ah in nominal capacity can
be assembled. When the closure cap assembly 7 has been
coupled with the opening end of cell casing 5, the positive
current collecting plate 6 is brought into contact with the 65
bottom surface of the cover plate 8 at a second weld portion
B shown in FIG. 1

It is quite clear from the above disclosure that Kitano’s invention is in fact an assembled and sealed, functional battery with the tab being welded only to the weld portion A, despite appellants’ allegations to the contrary.

Appellants then state that “the tab is welded to the end cap at the location labeled “B” in Figure 4” and therefore “As a result, Kitano’s sealed battery does not teach a tab that is not immobilized between the case and a location that is pas[t] the

centerpoint". Referring again to the disclosure of Kitano as cited above, there is nothing disclosed anywhere in the above passage that states that Kitano is welding the tab to the cap at the location labeled "B" before assembly as appellants infer, in fact as disclosed by Kitano the cap is sealed to the battery housing with only the tab being welded to the weld portion A and a final functional battery is formed. It is clear that the cited passage above forms a complete and functional battery with the tab only being welded to portion A. If assuming *arguendo* appellants are referring to the last sentence cited above that states that the tab is brought into contact with the cover plate at a second portion B. There is nothing in instant claim 43 that would prevent the tab from being in contact with more than one portion of the cap plate (which also appears to be the case as shown in instant figure 24), especially since appellants have chosen to use open claim language and therefore more can be present in the prior art and still read on the instant claims. Furthermore the discussion of being brought into contact does not imply or infer welding, in fact there is no discussion of welding whatsoever in said sentence. The fact remains that Kitano discloses a complete battery in the above cited passage because Kitano states "the closure cap assembly 7 is **coupled** with the opening of cell casing 5 is radially inwardly **caulked** at its opening end portion to **hermetically seal** the generator element. Thus, a nickel-cadmium **battery** of 1.7 Ah in nominal capacity can be assembled" (emphasis added).

Furthermore appellants do not argue the combination of Kitoh and Kitano as presented in the grounds of rejection, appellants only argue Kitano separately. It is noted that the secondary reference is used as a teaching reference, and therefore, it is

not necessary for this secondary reference to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather this reference teaches a certain concept and in combination with the primary reference, the presently claimed invention is disclosed.

Regarding the rejection of claim 43 under 35 U.S.C. 103(a) as being unpatentable over Kitoh and Chreitzberg appellants go to great lengths to state that the instant invention is not a mere design choice and has advantages over the prior art i.e. supposed unexpected results; and cite portions of their specification in supposed support, see page 14 of appellants' brief. On page 14 appellants underline the passages that they feel are key to the support of their advantages, i.e. unexpected results. However as has been stated to appellants, the supposed advantages that appellants refer are all "**prior to filling**", i.e. **before the battery is assembled** (emphasis added). This is even the exact language that appellants use in their own specification; see the portions of the specification cited by appellants in their brief on page 14 below (line 8 and the last line of the passage are cited below):

that orientation with the case end open prior to filling. To further describe the

and weld 110 as described to allow the weld to be made prior to filling.

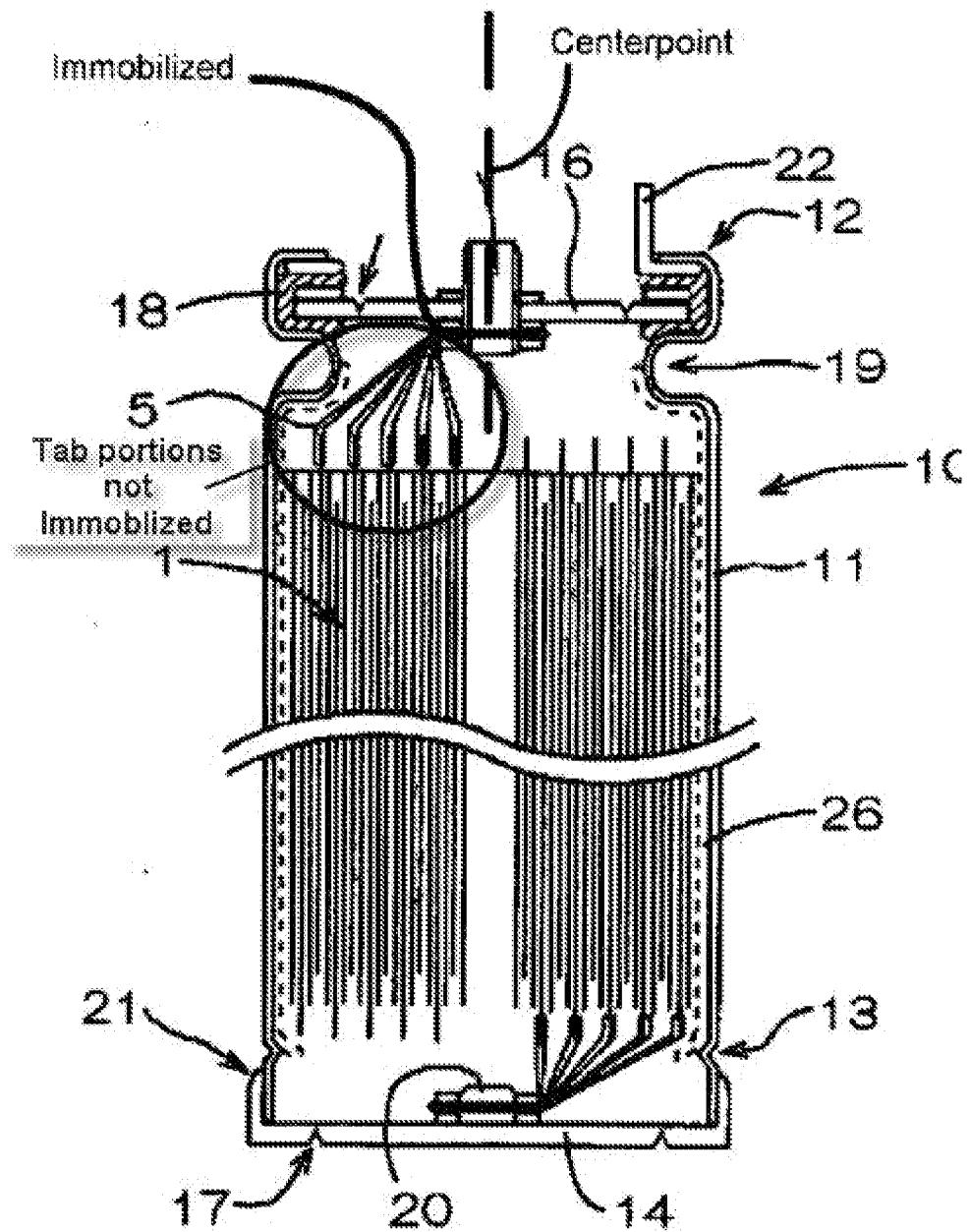
It is not clear how a supposed advantage "**prior to filling**" (i.e. before assembly) is an advantage for a final product. Claim 43 recites in part "An electric storage battery,

comprising: a case sealed by a first end cap and a second end cap...". This recitation alone shows that what appellants are trying to claim is a final product, i.e. a sealed battery, so appellants arguments are not commensurate with the scope of the claims. Appellants argue supposed advantages and features of an unsealed battery but claim 43 is drawn to a sealed battery. Appellants even admit to this in their remarks on page 17, lines 22-23 as reproduced below:

the assembly of Kitano's battery (C3, L30-31). In contrast, claim 43 is directed to a sealed battery (claim 43 recites "a case sealed by a first end cap and a second end cap"). As a result, we

Therefore appellants have still failed to meet their burden of proof showing that the instantly claimed invention (i.e. a final product of a sealed battery) has advantages i.e. unexpected results over the prior art.

Appellants state that the grounds of rejection appears to be based on an improper characterization of the cited art and state on page 3 of the Final Office Action dated July 13, 202 that the Examiner's statement stating "Kitoh further teaches that the tab is substantially not immobilized from the electrode assembly to said location" is not accurate. Appellants are citing a portion of the response to arguments and have taken said statement out of context. Because the Examiner further stated that "Kitoh teaches that by said configuration the internal resistance of the storage battery can be reduced and that this is the object of the invention of Kitoh (column 2, line 22 and column 5, lines 39 & 40). Appellants also provide the below annotated figure, which is further annotated to show more of the examiners point:



As can be seen above more than 90% of the tab portions are not immobilized and therefore the tab portions are substantially not immobilized as previously stated by the Examiner. The point of the statement made by the Examiner is to show that the majority of the tab portions of Kitoh are in fact not immobilized, and then by the

combination with Chreitzberg the claimed invention is actually taught as provided in the grounds of rejection, which was further emphasized to appellants in the response to arguments by citing Ex parte Obiaya, regarding obviousness.

Appellants state that the Examiner has not provided motivation or a reason for the worker in the art, without the benefit of appellant's specification to modify the battery of Kitoh. The motivation to combine was clearly provided to appellants in the grounds of rejection, which was clearly taken from the prior art and not appellant's specification. The motivation, which was/is stated in the above grounds of rejection and reiterated herein: "in order to reduce internal resistance and facilitate current extraction from the electrode" (Kitoh - column 2, line 22 and column 5, lines 39 & 40). Further it is quite confusing how appellants feel that the above motivation comes from their own specification when the passages they cite from their own specification are clearly drawn to the process of assembling the battery because it is "prior to filling" the battery as discussed above and no where in appellants specification is the reduction of internal resistance and current extraction discussed.

Appellants state that "The only way Kitoh can be modified so it includes a tab that is arranged as claimed is for one of Kitoh's terminals to be moved from its current location to a location that is off center in the cap". Therefore appellants admit that a skilled artisan would understand the combination as provided by the Examiner and would understand to offset the terminal in Kitoh so that it is off center. And because the relocation of the terminal does not affect the function of the battery of Kitoh the modification is not beyond the level of understanding for a skilled artisan.

Regarding the rejection of claim 89 under 35 U.S.C. 112, first paragraph, appellants state that figure 21 shows support for the negative limitation of "the tab is the only tab providing electrical communication between the second end cap and the electrode that is electrically insulated from the pin". Figure 21 is an illustration before the battery is assembled. Figure 24 shows an assembled battery however as seen in figure 24 the cap is in electrical communication with not just the tab, but it is also in electrical communication with the case. Therefore the cap is in electrical communication with the case and the tab and not only the tab as recited in the claim.

Regarding the rejection of claim 90 under 35 U.S.C. fourth paragraph, appellants state that the limitation the "tab is connected to the second end cap such that the second end cap can be removed" provides structure. However appellants fail to identify the additional structure that is provide by said limitation. Claim 90 depends on claim 68 which depends on claim 43 which states the "tab being immobilized...at the second location". Therefore the tab is already connected to the second end cap as recited in claim 43 and claim 90 does not provide any additional structure that further limits the scope of claims 68 and 43 respectively.

The remainder of appellants' arguments state that because claim 43 is supposedly patentable so should the dependent claims. However as shown above claim 43 is unpatentable in view of the cited prior art.

For all of the reasons clarified herein and already made of record the claims have been properly rejected as outlined in the grounds of rejection by providing proper

requisite rational for a skilled artisan and proper and explicit support from the prior art references.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Robert Hodge/

Primary Examiner, Art Unit 1729

Conferees:

/ULA C. RUDDOCK/

Supervisory Patent Examiner, Art Unit 1729

/ROBERT J. WARDEN, Sr./

Supervisory Patent Examiner, Art Unit 1700